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Holm himself, certainly looks quite as natural and life-like as any specimen of a recent arthropod exhibited in the museum.

The geological department hopes to have a limited number of copies of this model, which it is prepared to exchange with other museums. Naturally a model of this nature, which has taken a very long time to make, demands an exchange of considerable value, but for information on this matter inquiries should be addressed to the keeper of the geological department, Natural History Museum, Cromwell Road, London, S. W., England.

*THE RESEARCH LABORATORY OF PHYSICAL CHEMISTRY OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY*

THIS laboratory opened on September 1 for its fifth year. Professor G. N. Lewis has been appointed acting director of the laboratory, in place of Professor A. A. Noyes, who is temporarily acting as president of the institute. Investigations are being carried on in the laboratory by sixteen men of whom ten are devoting their whole time to research work. The new members of the research staff are Professor Carl von Ende (Ph.D., Göttingen), Mr. John Johnston (B.Sc., St. Andrews) and Mr. Roger D. Gale (S.B., Massachusetts Institute of Technology). Mr. R. B. Arnold (S.B., Rose Polytechnic Institute) enters as a candidate for the degree of doctor of philosophy. This degree was conferred last June on three of the research workers in the laboratory, Messrs. Raymond Haskell, R. B. Sosman and M. A. Stewart.

As in the past, a considerable part of the research work bears upon the problems of conductivity in aqueous solutions at high temperatures. The results of the numerous investigations in this field, which have already been completed in this laboratory, have recently appeared in a comprehensive memoir published by the Carnegie Institution. A new form of conductivity bomb, capable of withstanding very high pressures, has recently been constructed. In this bomb the vapor-pressure, density and compressibility of water up to the critical point are being studied, as

well as the influence of pressure upon the electrical conductivity of solutions. Closely allied investigations are being made upon electrical transference in mixed salt solutions, the solubility of salts in water at high temperatures, and the dielectric constant of water up to its critical point.

In another field of investigation which is receiving special attention in this laboratory several investigations are under way. These are directed towards the determination of the common electrode potentials, and of the free energy of important chemical reactions. Indirectly but vitally connected with these researches is an investigation of the specific heat of gases at very high temperatures, which is now being undertaken by Professor H. M. Goodwin and Dr. H. T. Kalmus.

The general scheme of qualitative analysis, developed by Professor A. A. Noyes and Dr. W. C. Bray, is being extended to include the detection of the acids. Other investigations begun in previous years on the hydration and the true transference numbers of the ions, on the electromotive force produced in a solution by rotating it at a very high rate of speed, and on the properties of the solutions of metals in liquid ammonia, are being brought to a successful conclusion. Mr. C. A. Kraus, who is carrying on the last-named investigation, has succeeded in finding the missing link between the metallic and the electrolytic conductor, and has thus obtained a new point of attack for the problem of the electron.

During the past year a gift of \$500 has been received from the William E. Hale Research Fund and one of \$3,000 from a private source in support of the work of the laboratory. In addition, Professor A. A. Noyes has received a grant of \$2,000 from the Carnegie Institution for assistance in carrying on the researches above referred to on the conductivity of aqueous solutions.

*THE CHICAGO MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE*

THE program for the *entire meeting* will be issued on Monday, December 30. Copies may be obtained at hotel headquarters and at the

office of the permanent secretary, in the Mitchell Tower Arcade, University of Chicago. No "Daily Program" will be issued.

The following events may be announced in advance:

*Saturday, December 28, 1907*

The register for the Chicago meeting will be open at 2 P.M. at the office of the permanent secretary, Auditorium Annex.

The regular meeting of the executive committee, consisting of the general secretary, the secretary of the council, and the secretaries of the different sections, will be held at noon in the rooms of the permanent secretary, at the Auditorium Annex.

*Sunday, December 29, 1907*

The office of the permanent secretary in the Auditorium Annex will be open all day for registration.

*Monday, December 30, 1907*

Meeting of the Council at 9 A.M., at Reynolds Theater, in the Tower group of the University.

First General Session of the Association at 10 A.M. in Leon Mandell Assembly Hall, University of Chicago.

The meeting will be called to order by the retiring president, Dr. W. H. Welch, who will introduce the president of the meeting, Professor E. L. Nichols.

Addresses of welcome will be delivered by Dr. Harry Pratt Judson, president of the University of Chicago, and by Mr. Charles L. Hutchinson, chairman of the Local Committee for the meeting.

Reply by President Nichols.

Announcements by secretaries.

Agreement on the hours of meeting.

Adjournment of the general session, to be followed by the organization of the sections in their respective halls.

Addresses by the vice-presidents at 2:30 P.M. as follows:

Vice-president Kasner, before the Section of Mathematics and Astronomy. Title, "Geometry and Mechanics."

Vice-president Richardson, before the Section of Chemistry. Title, "A Plea for the Broader Education of the Engineer."

Vice-president Conklin, before the Section of Zoology. Title to be announced later.

*Tuesday, December 31, 1907, at 2:30 P.M.*

Vice-president Sabine, before the Section of Physics. Title, "The Origin of the Musical Scale."

Vice-president MacDougal, before the Section of Botany. Title to be announced later.

Vice-president Conant, before the Section of Social and Economic Science. Title, "The Influence of Friction in Economics."

Vice-president Flexner, before the Section of Physiology and Experimental Medicine. Title, "Recent Advances and Present Tendencies in Pathology."

*Wednesday, January 1, 1908, at 2:30 P.M.*

Vice-president Warner, before the Section of Mechanical Science and Engineering. Title to be announced later.

Vice-president Brown, before the Section of Education. Title to be announced later.

OTHER PROGRAM ANNOUNCEMENTS

All the sections of the association and, so far as possible, all the affiliated societies, will meet at the University of Chicago on December 30. Several of the sections of the association will hold sessions in which topics of general interest will be discussed.

At 8 o'clock the retiring president will give his address in Leon Mandell Assembly Hall. At the close of the address a reception will be tendered to the association by President H. P. Judson and the board of trustees of the University of Chicago.

On the following days the sections and societies will hold their regular sessions. It is expected that there will be joint meetings when the same subjects are covered, and that some meetings will be arranged for of general interest to all members of the association. No definite arrangements have been made for the general evening functions after Monday night. Dinners and meetings of special societies and groups, smokers and informal meetings may be arranged for these subsequent evenings.

On Friday afternoon, January 3, there will be a convention of the Sigma Xi, followed by a banquet in the evening.

## RAILROAD RATES

THE railroads have generally authorized a reduced rate of two cents per mile each way, on the card-order plan. In order to get the benefit of these reduced rates, a card order, which can only be secured from the office of the permanent secretary, Dr. L. O. Howard, Smithsonian Institution, Washington, D. C., must first be obtained. A card is only good for one ticket, and should a member be accompanied by any members of his family, he will require a card for each person. Members expecting to attend the meeting will therefore advise the permanent secretary immediately of the number of cards desired.

Members residing in the territory of the Western Passenger Association and of the Southwestern Passenger Association are referred to the reduced rates granted by those associations for the holiday season, which will give them practically the same rate as has been granted by other passenger associations, and will obviate the necessity of obtaining a card order.

## ANNOUNCEMENTS BY THE LOCAL COMMITTEE

THE University of Chicago is located on the south side of the city, facing the Midway Plaisance. Most of the buildings in which the meetings will be held are located on a plot covering four city blocks, bounded by Ellis Avenue on the west, Lexington Avenue on the east, 57th Street on the north, and 59th Street on the south. The local headquarters are in the Reynolds Club, corner of Lexington Avenue and 57th Street. Enter through Mitchell Tower.

The College of Education, or Emmons-Blaine Hall, is located on 59th Street, between Monroe and Kimbark Avenues.

From the center of the city the university may be reached most easily by taking the Illinois Central suburban express trains. These trains leave the center of the city every twenty minutes from the foot of either Randolph or VanBuren Street. Get off at the 57th Street Station. Take the 'bus, or walk west, six blocks to Lexington Avenue.

The university may be reached from the center of the city and from intermediate

points by means of the Cottage Grove Avenue trolley. If the car is marked Grand X, get off at 57th Street and Cottage Grove Avenue and walk east six blocks to Lexington Avenue. If the car is marked Jackson Park, get off at the corner of Lexington and 55th Street, and walk south two blocks.

Passengers arriving by the Lake Shore and Michigan Southern, the Nickel Plate, the Rock Island; Chicago & Eastern Illinois, or the Pennsylvania, may reach the university easily by getting off at the Englewood Station. Take thence the 63d Street trolley east to Cottage Grove Avenue, transfer, and proceed north to 57th Street. Thence walk six blocks east to Lexington Avenue.

Passengers arriving by the Michigan Central, the Illinois Central, the Pere Marquette, or the Big Four, and wishing to go directly to the university, may get off at the 63d Street Station. Transfer to an Illinois Central local or express suburban train, get off at the 57th Street Station, and take 'bus or walk six blocks west to Lexington Avenue.

Passengers arriving over other lines will go to the terminal station of the road in the center of the city and come out to the university as described above.

Passengers over all lines, who wish to locate in hotels in the center of the city, should remain on the train until it reaches the terminal station in the center of the city.

## HOTELS

The Auditorium Annex, on Michigan Boulevard and Congress Street will be the general headquarters. The hotels recommended by the local committee are:

Auditorium Annex (Headquarters), Michigan Avenue and Congress Street.

\$2.00 and up for single rooms; \$1.50 and up per person for double rooms.

The Stratford, Michigan Avenue and Jackson Boulevard.

\$1.50 and up, single; \$1.25 and up per person, double.

Rooms may be engaged in advance by addressing Percy Tyrrell, manager.

The Victoria, Michigan Avenue and Van Buren Street.

\$1.00 and up, single; \$1.00 per person, double.

Grand Pacific, Michigan Avenue and Van Buren Street.

\$1.50 and up, single; \$1.25 and up per person, double.

Great Northern, Jackson and Dearborn Streets.

\$1.50 and up, single; \$1.25 and up per person, double.

Palmer House, State and Monroe.

\$1.50 and up, single; \$1.00 and up per person, double.

Wellington, Jackson Boulevard and Wabash Avenue.

\$1.00 and up, single; \$1.00 and up per person, double.

Kaiserhof, 27 S. Clark Street.

\$1.00 and up, single; \$1.00 and up per person, double.

McCoy's, Clark and Van Buren Streets.

\$1.00 and up, single.

Del Prado, Washington and 59th Streets.

\$2.50, American plan, for two in a room, with bath.

Facilities for lunch will be provided on the campus. The Reynolds Club, in the Tower Group, will be thrown open as general headquarters for the members of the association and the affiliated societies. Rest rooms for women are provided in Lexington Hall.

Secretaries of sections and of affiliated societies should notify the local secretary as soon as possible if lanterns are desired for illustrating papers to be read.

#### AFFILIATED SOCIETIES

All members of affiliated societies who are not members of the association are requested to register at the desk provided for the purpose in the office of the permanent secretary, Mitchell Tower Arcade, University of Chicago, so that an approximate record may be made of the total number of scientific men in attendance of the Convocation Week meetings. The following societies have indicated their intention to meet in Chicago during Convocation Week in affiliation with the American Association for the Advancement of Science:

The American Anthropological Association. President, Dr. Franz Boas, Columbia University, New York, N. Y.; Secretary, Dr. Geo. Grant MacCurdy, Yale University, New Haven, Conn.

Botanical Society of America. Secretary, Professor Duncan S. Johnson, Johns Hopkins University, Baltimore, Md.

The American Chemical Society. President, Marston T. Bogert, New York; Secretary, Chas. L. Parsons, Durham, N. H.

The American Folklore Society. President, Roland B. Dixon, Harvard University; Acting Permanent Secretary, A. M. Tozzer.

The American Mathematical Society. (While this society will hold its annual meeting in New York City during Convocation Week, the Chicago Section will meet with the American Association for the Advancement of Science. The secretary of the section is Professor H. E. Slaught, University of Chicago.)

The American Psychological Association. President, Dr. Henry Rutgers Marshall, New York City; Acting Secretary, Professor R. S. Woodworth, Columbia University.

The American Society of Naturalists. President, Professor J. P. McMurrich, Toronto, Canada; Secretary, Professor Edward L. Thorndike, Teachers College, Columbia University, New York, N. Y.

Association of American Anatomists. Meetings will be held January 1, 2 and 3. President, Franklin P. Mall, Johns Hopkins University, Baltimore, Md.; Secretary, Professor G. Carl Huber, University of Michigan, Ann Arbor, Mich.

Association of American Geographers. President, Professor Angelo Heilprin (deceased); Secretary, Professor Albert P. Brigham, Colgate University, Hamilton, N. Y.

Association of Economic Entomologists. Will meet December 27 and 28. President, Professor H. A. Morgan, Knoxville, Tenn.; Secretary, A. F. Burgess, Department of Agriculture, Washington, D. C.

Entomological Society of America. President, Professor J. H. Comstock, Ithaca, N. Y.; Secretary, J. Chester Bradley, Cornell University, Ithaca, N. Y.

The permanent secretary has received from the local secretary a statement that the American Nature Study Society, the American Federation of Teachers of Mathematics and Physical Science and the Teaching Section of the Lake Placid Conference on Home Economics will meet at the University of Chicago during Convocation Week.

By virtue of a resolution of the council adopted at the New York meeting, the programs of affiliated societies will be published by the association in the general program to be issued on the morning of December 30.

LOCAL EXECUTIVE COMMITTEE FOR THE CHICAGO  
MEETING

Charles L. Hutchinson,  
*Chairman Local Committee.*

John M. Coulter, *Chairman Executive Committee.*  
John R. Angell, Charles R. Mann,  
Thomas C. Chamberlin, Robert A. Millikan,  
Joseph P. Iddings, Charles F. Millsbaugh,  
Frank R. Lillie, Alexander Smith,  
J. Paul Goode, *Local Secretary.*

SCIENTIFIC NOTES AND NEWS

THE Royal Society has this year awarded its Davy medal to Dr. E. W. Morley, emeritus professor of chemistry, Western Reserve University, and its Copley medal to Dr. A. A. Michelson, professor of physics, the University of Chicago.

PROFESSOR G. A. MILLER has been appointed secretary of Section A—Mathematics and Astronomy—of the American Association, in place of Professor L. G. Weld, resigned, and all titles and abstracts of papers for the coming Chicago meeting should be sent to Professor Miller, 907 West Nevada Street, Urbana, Illinois.

IN view of the fact that Dr. Elwood Mead has been called to Australia to assume direction under government auspices of irrigation work in that country, the Secretary of Agriculture has divided the work of irrigation and drainage investigations of the Office of Experiment Stations, which Dr. Mead has managed since its establishment in 1898, into two sections. Dr. Samuel Fortier, irrigation engineer in charge of the Pacific district of the irrigation and drainage investigations, and stationed at the University of California, Berkeley, Cal., has been made chief of irrigation investigations. Mr. C. G. Elliott, for several years past engineer in charge of the drainage investigations of the office, has been made chief of drainage investigations.

At the *Reichsanstalt* Dr. Liebenthal and Dr. Diesselhorst, associates, have been appointed members and professors and Dr. Henning and Dr. Günther Schulze, assistants, have been appointed associates.

At a recent meeting of the Philadelphia College of Pharmacy the following persons

were elected honorary members: Dr. Harvey W. Wiley, chief of the Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.; Richard T. Baker, curator and economic botanist of the Technological Museum, Sydney, New South Wales; Henry G. Smith, assistant curator and chemist of the Technological Museum, Sydney, New South Wales; Professor Nagayoshi Nagai, professor of pharmacy in the College of Medicine of the Imperial University of Tokyo, and president of the Pharmaceutical Society of Japan; Dr. H. Thoms, professor of pharmacy and director of the Pharmaceutical Institute of the University of Berlin; Dr. Nathaniel Lord Britton, director of the New York Botanical Garden, New York City.

SIR OLIVER LODGE has accepted the invitation of the council to succeed the late Sir William Perkin in the presidency of the Faraday Society.

DR. CARL BECK, of New York City, is the American member of the committee to establish an institution in Berlin, to bear the name of Dr. Robert Koch.

PROFESSOR WILLIAM CAMPBELL, of Columbia University, has been elected a corresponding member of the Canadian Mining Institute.

DR. HENRY M. HURD, superintendent of the Johns Hopkins Hospital, has returned to Baltimore after spending eight months in Europe.

DR. CHARLES HARRINGTON, secretary of the Massachusetts state board of health, has returned from Europe. He has been absent several weeks attending the International Congress of Hygiene and Demography at Berlin, and studying problems of health in Germany and England.

LIEUTENANT E. H. SHACKLETON, leader of the British Antarctic expedition organized by himself, left London on October 31 for Marseilles, where he will join the P. and O. steamer *India*. He is due at Lyttelton on December 12.

THE regular meeting of the Columbia Chapter of the Society of Sigma Xi was held with the department of physics on October 31. Mr. L. B. Morse presented some of his recent